



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105**

January 12, 2016

**Re: Mitigation Plan for Your Review and Approval – Addressing TCE Vapor Intrusion to Indoor Air
Residential Building # 105, # 124, #125 - Sunnyvale, California
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites (“Triple Site”)**

Dear

Thank you for your cooperation and participation in the U.S. Environmental Protection Agency’s (EPA) vapor intrusion indoor air sampling investigations in Sunnyvale, California. EPA has tested the indoor and crawlspace air at your property referenced above. The results of the testing show evidence of trichloroethene (TCE) vapor intrusion above EPA’s health-protective screening levels. Based on these findings, EPA recommends a mitigation system for your building to prevent these vapors from continuing to rise up and accumulate indoors.

Locus Technologies (Locus), a private environmental consulting firm experienced in vapor intrusion issues, has prepared a mitigation plan for your review and approval. The plan is attached to this letter. J. Wesley Hawthorne of Locus will call you soon to discuss the plan and answer any questions that you may have about the system or the installation process. Mr. Hawthorne can also be reached at (415) 799-9937 or by e-mail to hawthornej@locustec.com. If you prefer, we can also meet with you in person to discuss in greater detail. As a reminder, there is no cost to you for installing or maintaining the mitigation system.

Background on EPA Investigation: EPA has been investigating the potential for vapor intrusion—a process where vapors from groundwater contamination may migrate into the indoor air in buildings—in the Duane/San Miguel Avenue neighborhood. Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing, and watering gardens comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains.

As of this month, EPA has tested all four schools in your area and 126 households. Certain rooms in five school buildings and 18 households have been found to be affected by vapor intrusion. Similar to your building, EPA is overseeing the development of mitigation plans for all of the affected properties.

About the Proposed Mitigation System: The mitigation system that EPA recommends for your building uses the best, most reliable technology available today to prevent TCE vapors from continuing to enter your building. The system is called a “sub-membrane depressurization system” and would be installed in the crawlspace underneath the building. It is described in detail in the attached mitigation plan, which includes a generic system diagram.

Another visit to your property will need to be arranged for making final design decisions with you and for obtaining building-specific measurements. Installation is expected to take 1 to 3 days depending on the specific site conditions. It is expected that building occupants will be able to maintain normal activities throughout the installation process. The construction work will be somewhat noisy during the installation, however, and so we would coordinate with you on your preferred days and times.

Should you choose to accept this mitigation system, you will need to sign the attached Access Agreement (permission form). Although you previously signed an Access Agreement, it covered only the investigation/sampling work that has been done to date. Because the installation and future monitoring of the mitigation system is more extensive, a new Access Agreement covering this additional work will need to be signed by the legal owners of the property, as well as the current tenants.

Follow-up Sampling and Inspections: After the mitigation system is installed, periodic air sampling and system inspections will be performed to confirm that the system is working correctly. Locus will work with you to schedule the sampling and inspections at times that are most convenient. Details are described in the attached mitigation plan under subheadings 'Operation and Maintenance' and 'Post-Mitigation Sampling Plan.'

What Happens When the System is No Longer Needed: At the time that the mitigation system is no longer needed (refer to 'Mitigation Termination Criteria' in the attached mitigation plan), you may (1) continue to operate the system at your own expense; (2) turn the system off and leave it in place; or (3) request that it be disassembled and removed.

Health Protection Goals: EPA's goal for Superfund site-related chemicals is to keep exposures as low as reasonably possible. EPA considers the safe range of TCE concentrations for residents to be below $2.0 \mu\text{g}/\text{m}^3$ (the short-term screening level). When an indoor air sample is collected and shows a concentration above the long-term screening level ($0.48 \mu\text{g}/\text{m}^3$) but below $2.0 \mu\text{g}/\text{m}^3$; EPA uses this information to decide whether additional sampling or response activities are necessary, to confirm that levels continue to remain protective over time. More information about TCE can be found at this website:

<http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30>

Your TCE Indoor Air Results: EPA considers TCE levels below 2.0 micrograms per cubic meter or $\mu\text{g}/\text{m}^3$ to be health protective. The sampling events in 2015 show higher levels of TCE in the air inside your building (up to $4.2 \mu\text{g}/\text{m}^3$ in the living room of Apt. 3) and underneath the building in the crawlspace (up to $20 \mu\text{g}/\text{m}^3$ in crawlspace air near Apt. 3).

The living room and crawlspace levels measured during this and several other sampling events exceed EPA's requirements, indicating that unacceptable vapor intrusion is occurring. Therefore, the attached mitigation plan has been prepared by Locus and approved by EPA specifically for your property to address the vapor intrusion issues.

The following table shows a summary of the TCE sampling results for your building.

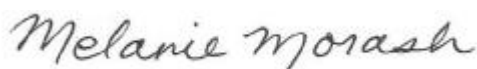
Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m³)			
	October 2015 (24-Hour Samples)	October 2015 (14-Day Samples)	November 2015 (24-Hour Samples)	November 2015 (14-Day Samples)
Indoor Air Sample (Hallway – Apt. 1)	2.6	2.1	--	--
Indoor Air Sample (Living Room – Apt. 1)	--	--	2.5	1.9
Indoor Air Sample (Bedroom – Apt. 1)	--	--	2.9	2.1
Indoor Air Sample (Living Room – Apt. 2)	--	--	1.5	1.7
Indoor Air Sample (Living Room – Apt. 3)	--	--	3.6	4.2
Crawlspace Air Sample (Underneath building near Apt. 3)	19	20	13	9.3
Crawlspace Air Sample (Underneath building in laundry room)	--	--	2.7	2.3
Outdoor Air Sample	0.028 – 0.62 µg/m³ (Range of outdoor air samples in the neighborhood)			
EPA Screening Levels				
Short-term Screening Level	2.0			
Long-term Screening Level	0.48			

TCE Vapor Intrusion Findings: The living room and crawlspace TCE concentrations do not meet EPA's requirements and show that unacceptable vapor intrusion is occurring. Therefore, a mitigation plan has been specifically developed for your property to address the vapor intrusion issue.

Next Steps: If you agree to this mitigation work, J. Wesley Hawthorne of Locus will contact you to discuss the proposed mitigation plan. In the meantime, please do not hesitate to contact me at any time at (415) 972-3050 or by email to morash.melanie@epa.gov if you have questions.

Again, EPA and Locus would also be happy to meet with you in person to discuss further and answer any questions you may have. **As a reminder, there is no cost to you for the installation or maintenance of this mitigation system.** Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,



Melanie Morash, EPA Project Manager

locustec.com

HEADQUARTERS:
SILICON VALLEY

299 Parkside Drive
Mountain View, CA 94043
Tel: 650-952-1640
Fax: 415-352-5088
Email: info@locustec.com

SAN FRANCISCO

LOS ANGELES

PHOENIX

ASHEVILLE

PITTSBURGH

BOSTON

21 December 2015

Melanie Morash
Remedial Project Manager
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, CA 94105

RE: *Mitigation Plan*
RES105/124/125
Offsite Operable Unit, Sunnyvale, California

Dear Ms. Morash:

Locus has prepared an implementation plan for indoor air mitigation at Residence #105/124/125. Locus will engage in discussions with the property owners regarding this plan, and implementation is contingent on their approval.

Building/Property Identification

Residence #105/124/125 is three apartment units in a single building in Sunnyvale, CA. These three units are the first floor apartments in a two-story apartment building. The apartment complex is approximately 2,000 square feet; each apartment is approximately 650 square feet. A building layout was prepared by Locus based on walkthroughs on 11 and 18 November 2015 (attached). A residential survey for Residence #105 was completed on 15 October 2015, with no revisions during the 11 November 2015 resampling event; residential surveys for Residences #124 and #125 were completed on 18 November 2015. These surveys are also attached. Residences #124 and 125 were sampled on 18 November 2015, and results are not yet available at the time of this submittal. However, crawlspace samples were taken in the crawlspace beneath Residence #125 during sampling of Residence #105; this data is included in the mitigation plan.

Description of Potential Vapor Pathways

Residence #105/124/125 has a crawlspace (approximately 20 inches in height; 3,300 cf in volume) with soil floor and passive vents, which are shown in the attached layout. In addition, there may be utility conduits between the crawlspace and the living space in some apartment units. Potential vapor intrusion pathways include the crawlspace and associated utility conduits.

Summary of All Relevant Data

Analytical results received to date for trichloroethylene (TCE) are shown in the table below; all air samples were collected during 2015 by Locus and EPA contractors. Values in bold exceed EPA screening levels. Analytical results from all parameters tested by Locus are attached.

Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m³) from 2015		
	October (24-Hr)	October (14-Day)	November (24-Hr)
Indoor Air Sample (Hallway)	2.6	2.1	2.1-2.5
Indoor Air Sample (Bedroom)	—	—	2.5-2.9
Crawlspace Air Sample (Under Apt #3)	19	20	9.6-13
Crawlspace Air Sample (Under Laundry Room)	—	—	2.0-2.7
Outdoor Air Sample	0.31 (highest sample detected in neighborhood)		
EPA Screening Levels (SL)			
Short-term SL	2.0		
Long-term SL	0.48		

Proposed Mitigation Plan

Locus recommends installing a sub-membrane depressurization system (SMDS) for this property. Additionally, Locus recommends sealing around utility conduits that create pathways between the crawlspace and living areas.

Description

Implementation will entail sealing utility pathways between the crawlspace and occupied space. The SMDS will entail laying evenly spaced perforated pipe (4 inches in diameter and not less than 10 feet in length) on the floor of the crawlspace. Perforated pipe may be all or partially entrenched and/or reduced to 3 inches in diameter if requested by the owner or if necessary in order to leave a minimum of 18 inches access clearance between the top of the perforated pipe to the bottom of untreated wood or ductwork. Trenching may increase the time frame for system installation and involve additional soil handling and storage on the property. Locus will discuss these options with the owner and will accommodate owner requirements if feasible. A 10 mil co-extruded, polyolefin, ASTM E-1745 Class A vapor barrier will then be laid over the perforated pipe. The vapor barrier will be sealed at all seams and to the exterior footing and support posts. VOCs in sealing materials will be minimized. Perforated pipe will have a single collection point connected to a suction fan located on the exterior of the residence. It is suspected that the crawlspace area

is connected beneath the apartment complex; if this is not the case, the collection point may entail an exterior connection between perforated pipe under isolated sections of the crawlspace. Locus will install and maintain the system. Reimbursement of electricity costs for fan operation is available and will be discussed with the property owner.

The suction fan will exhaust at least two feet above the roofline via an exterior vent stack alongside the exterior of the residence. A screen/mesh not smaller than ½ inch will cover the opening of the vent stack. A pressure test under the membrane will be conducted upon initial installation to ensure the SMDS is providing a negative pressure across the crawlspace.

An audible alarm will be installed in a visible location that will sound and include a visual flashing light if fan operation fails (vacuum below 0.25" WC). A posted placard near the audible alarm will include instructions and contact information for the owner/tenant to call the Locus technician in the event of an alarm. Locus will discuss additional signage and alarm options available to the owner (e.g. indoor installations). If effective remote communication systems are feasible at the site, the alarm system may communicate with Locus directly. Depending on the furnace configuration at the property, a carbon monoxide detector may be appropriate for the indoor space, and will be provided to the property owner if warranted.

The system will be installed in accordance with ASTM E2121-11, Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings. Installation is expected to take 1 to 3 days depending on the specific site conditions. The residents are expected to be able to maintain normal activities throughout the installation process.

After implementation, air sampling will be conducted in order to ensure mitigation effectiveness (described in a subsequent section of this plan). The mitigation will be determined to be effective if air sample results in the crawlspace are below or within the EPA risk range (0.48-2 µg/m³) under normal occupancy conditions and results in the occupiable space are below the EPA long-term screening level (0.48 µg/m³). Previous sample results from the crawlspace have shown concentrations ranging from 2.0-20 µg/m³; previous results in the living space have shown concentrations ranging from non-detect to 2.1-2.9 µg/m³. Therefore, a concentration reduction of 90% or more in the crawlspace and 83% or more in the living space would be considered effective.

Specifications

A generic system diagram is attached. Mitigation installer will be a licensed HVAC and general contractor. The mitigation installer will therefore inspect the home and installation process for potential adverse effects. If any are identified they will be brought to Locus' attention to determine whether there exist feasible options to control for adverse effects.

Specifications for the following system components are attached:

- Model RP145 mitigation fan by RadonAway. Alternatives include Model RP260 or SF180, if necessary. Fans are expected to operate at 0.5" WC static pressure.

- Model VB10 VaporBlock membrane by Raven Engineered Films.
- Checkpoint IIa alarm by RadonAway, or similar, including audible and visual alarm and silencing capability. Alarm will sound (and light flash) when vacuum is below 0.25" WC.

A gas-tight sampling port (1/4" pipe and sampling nipple with brass ball valve) will be installed above (downstream) of the fan for as needed vapor stack sampling. A port will be installed below (upstream) of the fan where pressure and flow readings can be taken.

Weather-proof placards will be securely affixed at the alarm/fan location and at crawlspace access points and will include the following information:

- Locus contact information
- Notification that the system is to remain on (e.g. "Do Not Turn Off") and instructions to call Locus immediately in the event of an alarm or system off condition
- Instructions on how to silence alarm
- Notification of mitigation system components and purpose, e.g. "TCE Reduction System" and "Do Not Alter"

EPA will have the opportunity to review final language of placards before posting.

Implementation Schedule

- Within ten calendar days of receipt of EPA's approval of the building-specific mitigation plan, implementation of mitigation measures will begin. Mitigation measures will begin with discussions with the property owner and obtaining their approval to proceed.
- Within 90 calendar days of the property owner's approval to proceed, the mitigation plan will be implemented, contingent on availability of system components, any permits required, and scheduling with the occupants and contractors.
- Within 30 calendar days of completion of mitigation activities, a final report will be submitted to EPA including copies of as-built drawings and O&M plans, and copies of documentation provided to owners and tenants. Mitigation activities will be considered complete upon determination by sample results that the system is effective.

Justification

Sub-membrane depressurization systems are a proven technology installed throughout the country for residential mitigation of VOCs in indoor air¹. The systems have an even longer record of effectiveness for the purposes of radon mitigation, complete with ASTM standards¹. The mechanical system will reduce the entry of soil gases into the residence by effectively sealing pathways of vapor intrusion from the crawlspace and providing an active alternate ventilation pathway to the atmosphere. Due to the likelihood of success of this design, disruption to the residents is expected

¹ OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air, OSWER Publication 9200.2-154, EPA Office of Solid Waste and Emergency Response, June 2015; communication with vapor intrusion mitigation designers.

to be minimized and the implementation process is expected to be efficient and expedient.

Potential Alternatives (if necessary)

If the SMDS does not initially meet effectiveness criteria, the potential contributions from indoor air background sources will be evaluated first. If no background sources are identified, the system will be inspected for: good seals (including utility conduits, the membrane itself and membrane seals to penetrations and exterior footing), sufficient fan velocity, and other adjustments to improve effectiveness. If the SMDS still does not meet effectiveness criteria, alternatives will be implemented and tested. Alternatives or add-ons that may be considered include additional perforated piping and suction fan upgrades.

Operation and Maintenance of Proposed Mitigation - Framework

Following implementation, these operation and maintenance activities are expected:

- Quarterly inspections during the first year of operation and annual inspections thereafter, including checking and repairing, as necessary: rodent, trade, or other damage to membrane, seals on membrane and vent stack, fan operation (including velocity measurement in vent stack), seals on utility conduits between crawlspace and living space, electrical components. Expected length of time per inspection: three hours or less.
- If the fan's audible alarm sounds, owner/tenant will call the Locus technician for inspection and repair (contact information will be provided on a posted placard near the audible alarm). If effective remote communication systems are feasible at the site, the alarm may call Locus directly. In all cases, the technician will coordinate with the owner prior to arriving on-site.
- At the time that the vapor intrusion mitigation is no longer needed to maintain concentrations within the health-protective range (refer to Mitigation Termination Criteria), the owner may continue to operate the system at the owner's expense, may turn the system off and leave it in place, or may request that it be disassembled and removed.

Further details on the ongoing operation, maintenance, and monitoring of the mitigation system will be communicated to EPA and the property owner in an Operation & Maintenance (O&M) Plan.

Post-Mitigation Sampling Plan to Confirm Success of Mitigation

After implementation of pathway seals and the SMDS, air samples will be collected from the crawlspace and living space (see attached layout) using passive samplers. If additional crawlspace access can be procured without property damage, additional crawlspace sample locations may be evaluated. If additional pathways within the livable space are identified (e.g. at furnace or other conduits) and accessible (e.g. furnace not in use), these may be sampled. Sampling of indoor, crawlspace, and outdoor air will be conducted 1 to 2 weeks following installation, a month following initial sampling, and then during the first winter and spring of operation. After that

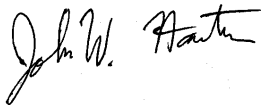
period, annual monitoring will consist of physical inspections of the ventilation system as described above. Where concentrations do not meet effectiveness criteria, the residence and mitigation system will be surveyed to evaluate for potential chemical sources. If it is found necessary to improve the mitigation system, the post-mitigation sampling schedule will start after improvements are implemented. If sampling conditions can be arranged such that interior ventilation is minimized in the occupiable space, effectiveness criteria will be evaluated under those conditions.

Mitigation Termination Criteria

The SMDS will be operated until air sample results meet the following criteria without operation of the SMDS: results in the crawlspace are below or within the EPA risk range ($0.48\text{--}2\text{ }\mu\text{g}/\text{m}^3$) under normal occupancy conditions and results in the occupiable space are below the EPA long-term screening level ($0.48\text{ }\mu\text{g}/\text{m}^3$). EPA approval will be obtained prior to mitigation termination. The trigger to begin sampling for the evaluation of mitigation termination may be determined based on a combination of factors, such as, standpipe vapor sample results, regional soil gas screening levels, site-specific fate and transport modeling, and local groundwater concentrations.

If you have any questions regarding this correspondence, please call me at (415) 799-9937.

Sincerely,

A handwritten signature in black ink, appearing to read "John W. Hawthorne".

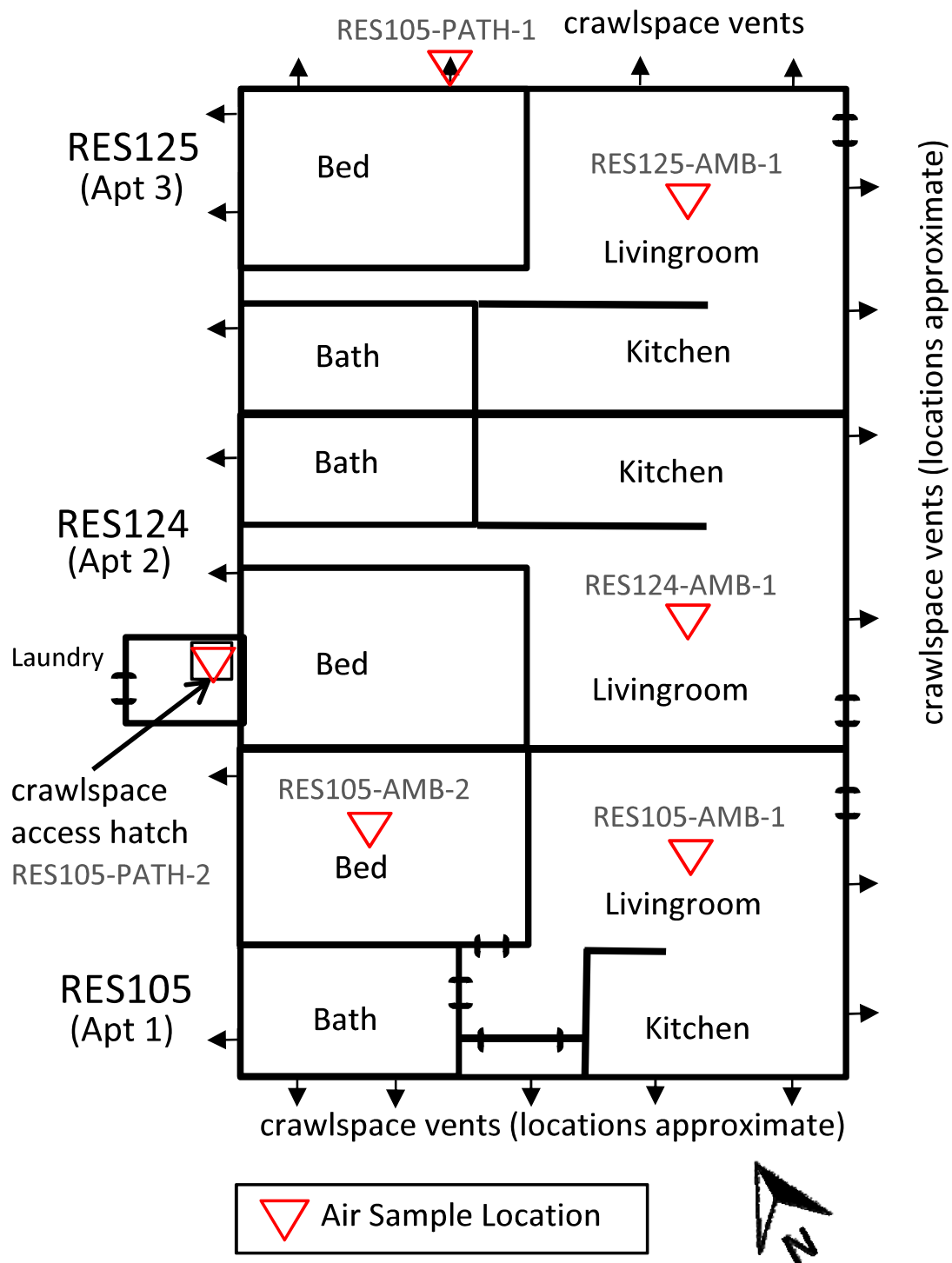
J. Wesley Hawthorne, PE, PG
Senior Vice President

JWH/njl

Attachment:

- RES105/124/125 Building Layout with Sample Locations
- Residential Survey Forms (dated 15 October and 18 November 2015)
- System Design Diagram
- Specifications for Membrane, Fan, and Alarm
- Raw Data Package (electronic data received to date)

cc: (electronic copies)
Shau-Luen Barker, Philips Semiconductors
Leslie Lundgren, CB&I
Todd Maiden, Reed Smith LLP
Linda Niemeyer, Northrop Grumman Systems Corporation
Heather O'Cleirigh, AMD



Residential Survey Form

P.O. 515
Date: 10/15/15 Site: TRIPLE SITE EPA Residence Location #: P-5105

PART 1: General Information

Address:

Occupant Information

Building Type (Check appropriate boxes)

☐ Single-Family ☐ Duplex ☐ Condominium/Townhouse ☒ Apartment Building ☐ Mobile Home/ Trailer

Other ☐ _____

Building Occupancy

What times / days is building likely to receive ventilation Weekends - once a week

Are the heating / cooling systems routinely operated? ☐ Yes ☒ No

If yes, what times of the day / year? _____

Building Characteristics

Year/Decade Built: _____ Number of Stories: 2

Approximate Building Area (square feet): Total _____ First Floor _____

If there is an attached garage describe its use: NO

Foundation Type (Check appropriate boxes)

☐ Slab-on-Grade

☒ Crawl Space - Describe Crawl Space (Access Location, Height, and Vent Locations)

Outside - Vents at ~~entrance~~ bottom of blk. & access under vent #3

☐ Basement - Characteristics (Check appropriate boxes)

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Condition of the Concrete / Floor _____

PART 2: Factors Impacting Indoor Air Quality

Questions

Describe remodeling, painting, or significant cleaning activities that have occurred over the last 6 months (what was done, what area, and when):

No

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

Describe any open combustion in the building (Smoking/Incense/Candles/Fireplace):

NO

Describe any chemical-infused materials that are regularly brought into the building (including dry cleaned clothes/fabrics or those brought home from work (what/how often):

NO

Have site chemicals of concern been used or stored in building or adjacent garage?

☐ Yes ☒ No

Please list the chemicals _____

Have any significant amounts of volatile chemicals been used recently? ☐ Yes ☒ No

Please list the chemicals _____

Describe any instance of water/groundwater present in the basement/crawlspace (including sumps):

Observations

What is the temperature relative to outside? Same

What pathways to the subsurface were observed? vents outside building

Are windows and door kept open? no

Is there evidence of significant negative pressure? no

Do parts of the indoor environment appear stagnant? no

Describe any strong odors. no

Other Information (that may be of importance in understanding the indoor air quality in residence):

Potential Sampling Locations

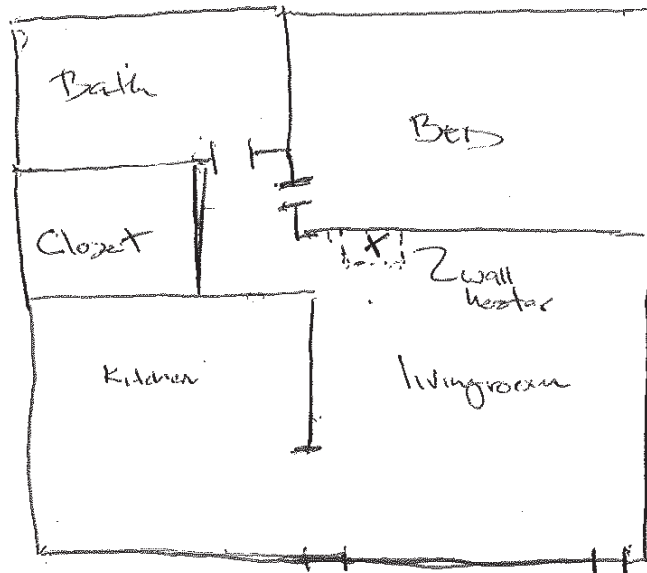
General notes on potential sample locations and type. Tentative sampling date(s) and preferred times.

Radon sample under unit #3

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

On this page, draw the general floor plan of the building and denote potential locations of sample collection. Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.



Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES 100

PART 3: Inventory of Potential Indoor Chemical Sources:

Instructions: List items/products in the building or the attached garage that may contain site compounds of concern. These should be removed prior to sampling. List items/products that give off significant volatiles as these may interfere with chemical analysis. Include chemicals that may be tracked into the house from an occupant. This could be chemical usage at work or in an attached workshop/garage. A portable instrument, such as a photo-ionization detector (PID) can be used to help locate volatile chemicals.

Examples of products that may contain trichloroethene (TCE) or related chemicals include gun cleaner, rubber cement, solvent degreasers, spot removers, correction fluid, and electrical motor cleaner (also be aware that older products are more likely to contain TCE).

Examples of significant volatile chemical sources include gas powered equipment, gasoline storage cans, oil-based paint, paint thinner, nail polish remover, moth balls, perfumes, scented decorative items, and insecticides.

[illegible]

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

PART 4: Building Ventilation Systems

Type(s) of Cooling/Heating Used (Check appropriate boxes)

- ☐ Central Forced Air (ducted)
- ☐ Natural Gas Furnace ☐ Electric Furnace
- ☐ Air Conditioner?
- ☐ Outdoor Air Intake?
- ☐ Floor Vents on the first floor?

Location of the Furnace _____

Which rooms have air supply _____

Location of air returns _____

- ☒ Centrally located wall heater(s)

Natural Gas or Electric?

Location(s) Not ducted to return

- ☐ Centrally located floor heater(s)

Natural Gas or Electric?

Location(s) _____

- ☐ Electrical Radiators

Location(s) _____

- ☐ Water/Steam Radiators

Location(s) _____

- ☐ Radiant Floor Heat

Location(s) _____

- ☐ Wood Stove(s)

Location(s) _____

- ☐ Fireplace

Location(s) _____

- ☐ Window / Wall Air Conditioning Units

Location(s) _____

Are the outdoor air vents opened (if equipped) _____

- ☐ Other (specify) _____

Are fans used?

- ☐ No ☒ Yes, Ceiling fans ☐ Yes, Room Fans ☒ Yes, Kitchen Exhaust ☒ Yes, Bathroom Exhaust

☐ Yes, Attic/Whole house Fans CFM _____

☐ Other (specify) _____

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

Additional Notes:

Residential Survey Form

P.O. Friday 10:00 AM
Date: 11/18/15

Site: _____

EPA Residence Location #: RES124

PART 1: General Information

Address: _____

Occupant Information

Building Type (Check appropriate boxes)

☐ Single-Family ☐ Duplex ☐ Condominium/Townhouse ☒ Apartment Building ☐ Mobile Home/ Trailer
Other ☐ _____

Building Occupancy

What times / days is building likely to receive ventilation NO

Are the heating / cooling systems routinely operated? ☐ Yes ☐ No will not, not on yet

If yes, what times of the day / year? _____

Building Characteristics

Year/Decade Built: _____ Number of Stories: 2

Approximate Building Area (square feet): Total _____ First Floor 1

If there is an attached garage describe its use: NO, carport only

Foundation Type (Check appropriate boxes)

☐ Slab-on-Grade

☒ Crawl Space – Describe Crawl Space (Access Location, Height, and Vent Locations)

outside of building / laundry room

☐ Basement - Characteristics (Check appropriate boxes)

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Condition of the Concrete / Floor _____

PART 2: Factors Impacting Indoor Air Quality

Questions

Describe remodeling, painting, or significant cleaning activities that have occurred over the last 6 months (what was done, what area, and when):

none

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

Describe any open combustion in the building (Smoking/Incense/Candles/Fireplace):

Candles sometimes

Describe any chemical-infused materials that are regularly brought into the building (including dry cleaned clothes/fabrics or those brought home from work (what/how often):

NO

Have site chemicals of concern been used or stored in building or adjacent garage?

☐ Yes ☒ No

Please list the chemicals

N/A

Have any significant amounts of volatile chemicals been used recently? ☐ Yes ☒ No

Please list the chemicals

N/A

Describe any instance of water/groundwater present in the basement/crawlspace (including sumps):

None

Observations

What is the temperature relative to outside? Warmer

What pathways to the subsurface were observed? outside, laundry room

Are windows and door kept open? NO

Is there evidence of significant negative pressure? NO

Do parts of the indoor environment appear stagnant? NO

Describe any strong odors. New carpet smell

Other Information (that may be of importance in understanding the indoor air quality in residence):

N/A

Potential Sampling Locations

General notes on potential sample locations and type. Tentative sampling date(s) and preferred times.

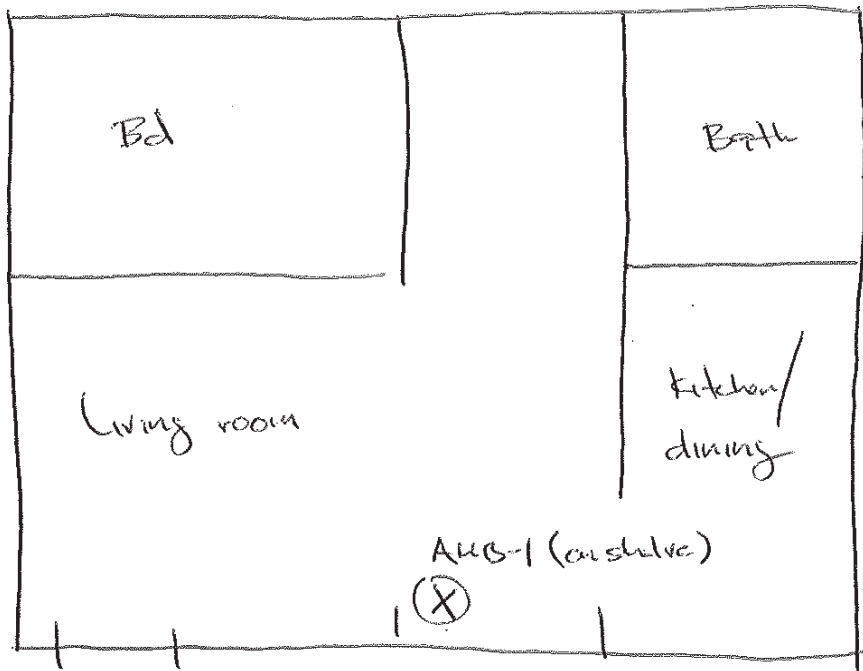
Couple just moved in a few days ago

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

On this page, draw the general floor plan of the building and denote potential locations of sample collection. Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.

UNIT 2



Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES 124

PART 3: Inventory of Potential Indoor Chemical Sources:

Instructions: List items/products in the building or the attached garage that may contain site compounds of concern. These should be removed prior to sampling. List items/products that give off significant volatiles as these may interfere with chemical analysis. Include chemicals that may be tracked into the house from an occupant. This could be chemical usage at work or in an attached workshop/garage. A portable instrument, such as a photo-ionization detector (PID) can be used to help locate volatile chemicals.

Examples of products that may contain trichloroethene (TCE) or related chemicals include gun cleaner, rubber cement, solvent degreasers, spot removers, correction fluid, and electrical motor cleaner (also be aware that older products are more likely to contain TCE).

Examples of significant volatile chemical sources include gas powered equipment, gasoline storage cans, oil-based paint, paint thinner, nail polish remover, moth balls, perfumes, scented decorative items, and insecticides.

[illegible]

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

PART 4: Building Ventilation Systems

Type(s) of Cooling/Heating Used (Check appropriate boxes)

☐ Central Forced Air (ducted)

☐ Natural Gas Furnace ☐ Electric Furnace

☐ Air Conditioner?

☐ Outdoor Air Intake?

☐ Floor Vents on the first floor?

Location of the Furnace _____

Which rooms have air supply _____

Location of air returns _____

☒ Centrally located wall heater(s) (not air)
Natural Gas or Electric?

Location(s) in living room

☐ Centrally located floor heater(s)
Natural Gas or Electric?

Location(s) _____

☐ Electrical Radiators

Location(s) _____

☐ Water/Steam Radiators

Location(s) _____

☐ Radiant Floor Heat

Location(s) _____

☐ Wood Stove(s)

Location(s) _____

☐ Fireplace

Location(s) _____

☐ Window / Wall Air Conditioning Units

Location(s) _____

Are the outdoor air vents opened (if equipped) _____

☐ Other (specify) _____

Are fans used?

☒ No ☐ Yes, Ceiling fans ☐ Yes, Room Fans ☒ Yes, Kitchen Exhaust ☐ Yes, Bathroom Exhaust

☐ Yes, Attic/Whole house Fans CFM _____

☐ Other (specify) _____

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

Additional Notes:

N/A

Residential Survey Form

Date: 11/18/15 Site: TS EPA Residence Location #: RES125

PART 1: General Information

Address:

Occupant Information

Building Type (Check appropriate boxes)

☐ Single-Family ☐ Duplex ☐ Condominium/Townhouse ☒ Apartment Building ☐ Mobile Home/ Trailer
Other ☐ _____

Building Occupancy

What times / days is building likely to receive ventilation open bathroom window all the time

Are the heating / cooling systems routinely operated? ☒ Yes ☐ No no A/C

If yes, what times of the day / year? winter only

Building Characteristics

Year/Decade Built: _____ Number of Stories: 2

Approximate Building Area (square feet): Total _____ First Floor 1

If there is an attached garage describe its use: carport only

Foundation Type (Check appropriate boxes)

☐ Slab-on-Grade

☒ Crawl Space – Describe Crawl Space (Access Location, Height, and Vent Locations)

side of building / laundry room

☐ Basement - Characteristics (Check appropriate boxes)

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Condition of the Concrete / Floor _____

PART 2: Factors Impacting Indoor Air Quality

Questions

Describe remodeling, painting, or significant cleaning activities that have occurred over the last 6 months (what was done, what area, and when):

8 mo/ ago bathroom remodeled & painted

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES125

Describe any open combustion in the building (Smoking/Incense/Candles/Fireplace):

air freshener used in bathroom

Describe any chemical-infused materials that are regularly brought into the building (including dry cleaned clothes/fabrics or those brought home from work (what/how often):

1x every 2 weeks

Have site chemicals of concern been used or stored in building or adjacent garage?

☐ Yes ☒ No

Please list the chemicals N/A

Have any significant amounts of volatile chemicals been used recently? ☐ Yes ☒ No

Please list the chemicals N/A

Describe any instance of water/groundwater present in the basement/crawlspace (including sumps):

None

Observations

What is the temperature relative to outside? warmer

What pathways to the subsurface were observed? laundry room/building vents

Are windows and door kept open? yes

Is there evidence of significant negative pressure? no

Do parts of the indoor environment appear stagnant? no

Describe any strong odors. no

Other Information (that may be of importance in understanding the indoor air quality in residence):

N/A

Potential Sampling Locations

General notes on potential sample locations and type. Tentative sampling date(s) and preferred times.

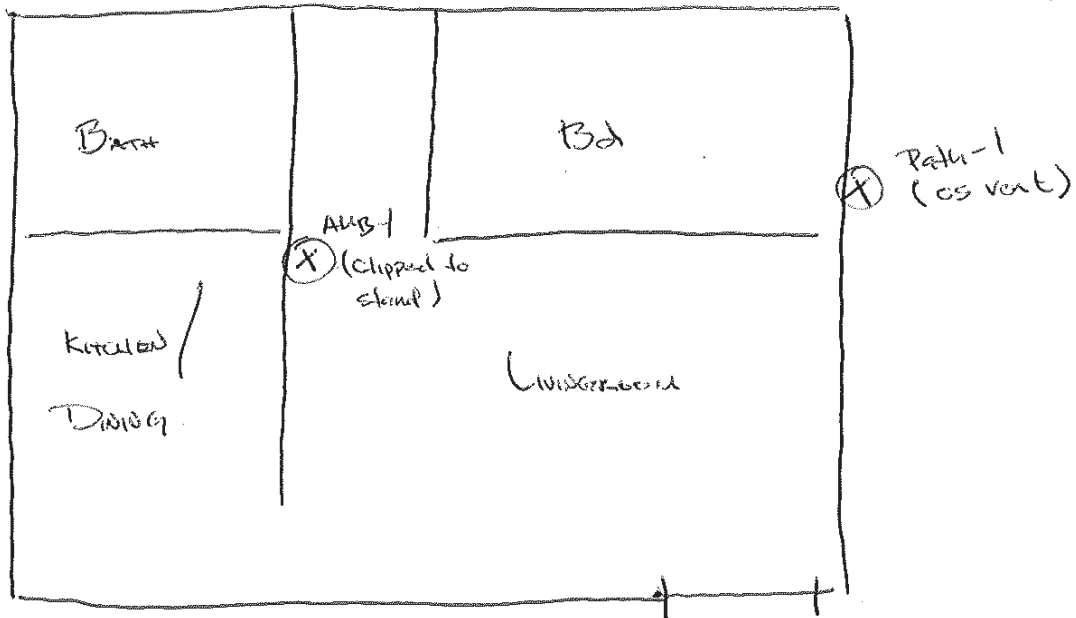
N/A

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES125

On this page, draw the general floor plan of the building and denote potential locations of sample collection. Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.

Unit 3



Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES 125

PART 3: Inventory of Potential Indoor Chemical Sources:

Instructions: List items/products in the building or the attached garage that may contain site compounds of concern. These should be removed prior to sampling. List items/products that give off significant volatiles as these may interfere with chemical analysis. Include chemicals that may be tracked into the house from an occupant. This could be chemical usage at work or in an attached workshop/garage. A portable instrument, such as a photo-ionization detector (PID) can be used to help locate volatile chemicals.

Examples of products that may contain trichloroethene (TCE) or related chemicals include gun cleaner, rubber cement, solvent degreasers, spot removers, correction fluid, and electrical motor cleaner (also be aware that older products are more likely to contain TCE).

Examples of significant volatile chemical sources include gas powered equipment, gasoline storage cans, oil-based paint, paint thinner, nail polish remover, moth balls, perfumes, scented decorative items, and insecticides.

[illegible]

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES125

PART 4: Building Ventilation Systems

Type(s) of Cooling/Heating Used (Check appropriate boxes)

☐ Central Forced Air (ducted)

☐ Natural Gas Furnace ☐ Electric Furnace

☐ Air Conditioner?

☐ Outdoor Air Intake?

☐ Floor Vents on the first floor?

Location of the Furnace _____

Which rooms have air supply _____

Location of air returns _____

☒ Centrally located wall heater(s)

Natural Gas or Electric?

*not on yet, but will use
in winter/colder days*

Location(s) living room

☐ Centrally located floor heater(s)

Natural Gas or Electric?

Location(s) _____

☐ Electrical Radiators

Location(s) _____

☐ Water/Steam Radiators

Location(s) _____

☐ Radiant Floor Heat

Location(s) _____

☐ Wood Stove(s)

Location(s) _____

☐ Fireplace

Location(s) _____

☐ Window / Wall Air Conditioning Units

Location(s) _____

Are the outdoor air vents opened (if equipped) _____

☐ Other (specify) _____

Are fans used?

☐ No ☐ Yes, Ceiling fans ☒ Yes, Room Fans ☒ Yes, Kitchen Exhaust ☐ Yes, Bathroom Exhaust

☐ Yes, Attic/Whole house Fans CFM _____

☐ Other (specify) _____

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES125

Additional Notes:

n/a

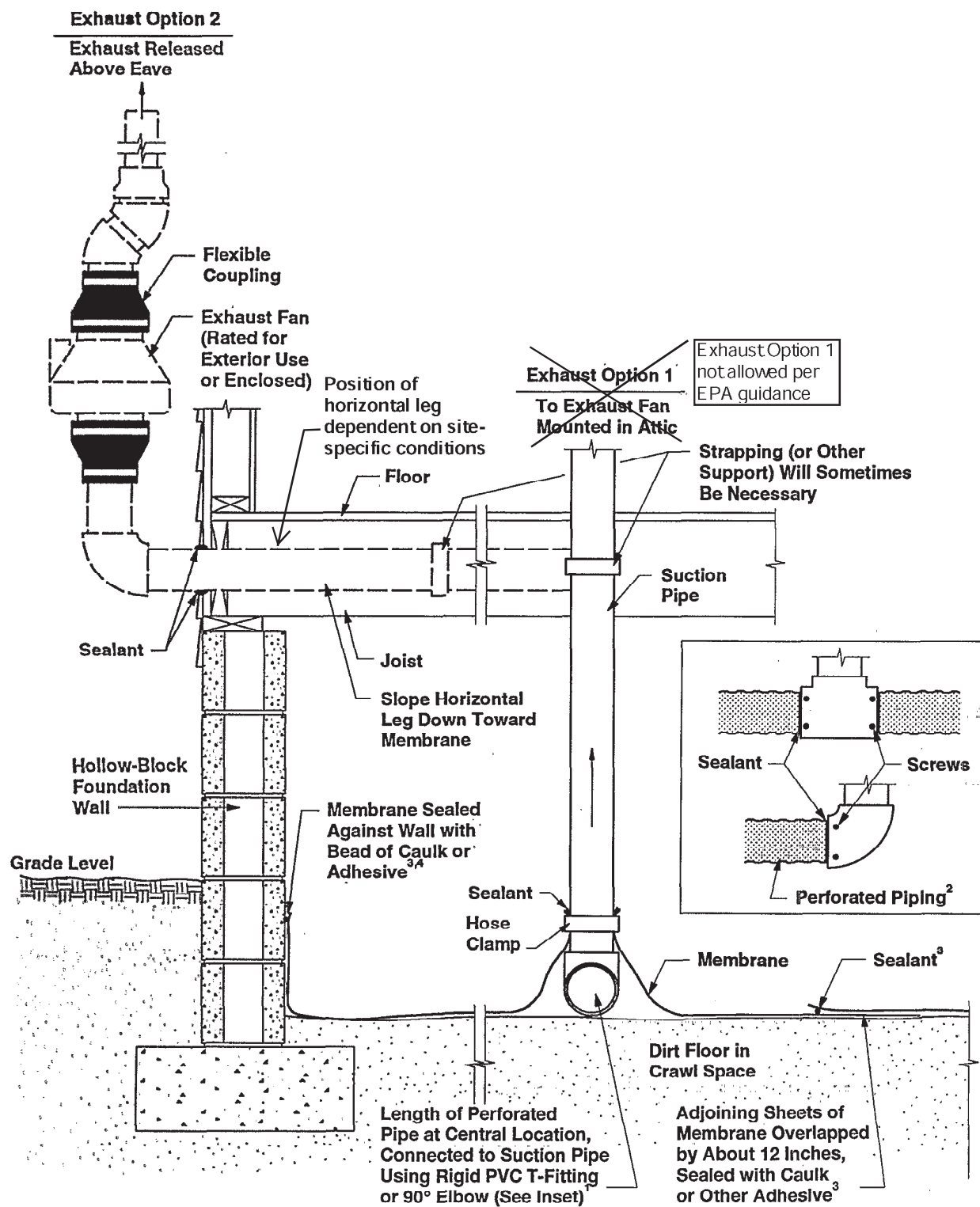


Figure 7. Sub-membrane depressurization (SMD) for the case where suction is drawn on perforated piping beneath the membrane (DTD analogue).

ADAPTED FROM Henschel, D. Bruce. October 1993 Radon Reduction Techniques for Existing Detached Houses: Technical Guidance (Third Edition) for Active Soil Depressurization Systems, EPA Office of Research and Development, EPA/626/R-93/011.

VAPORBLOCK® VB6 & VB10

High Performance Underslab Vapor Barrier

RAVEN
ENGINEERED FILMS

Product Description

VaporBlock® is a high performance, underslab vapor barrier designed to retard moisture migration through concrete slabs and concrete walls to protect your structure from:

- **MOLD:** VaporBlock® reduces moisture condensation within a structure, impeding the growth of molds, mildews, and fungi.
- **MOISTURE:** VaporBlock® protects flooring materials by maintaining moisture levels well below the requirements of ASTM E-1745-11.
- **RADON:** VaporBlock® is used as a component of radon mitigation systems to protect indoor air quality and occupant health.

VaporBlock® is one of the most effective underslab vapor barriers on the market today! Benefits include:

- Low moisture vapor permeability
- Superior puncture resistance
- High tensile tear strength
- Resistance to decay and degradation

VaporBlock® is manufactured to strict conformance specifications under our ISO 9001-2008 Certified Management System to consistently exceed ASTM standards and project expectations. Raven's accredited lab ensures VaporBlock® meets the highest possible quality standards across multiple industries. VaporBlock® is supported with independent testing. Results are available upon request, as required under ASTM E-1745-11. VaporBlock® is readily available through nation-wide distribution:

- Available in 6, 10 and 15 mil for optimal project flexibility (VB15 on separate data sheet)
- Larger roll sizes equal lower installation costs

Raven Industries manufactures VaporBlock® and controls all aspects from start to finish assuring the final product meets our high performance standards. Raven is a publicly-traded company, with over 50 years of stability and service excellence to stand behind our products with a future of innovation and growth.

VaporBlock®
UNDERSLAB VAPOR RETARDER



Vapor Barrier - Commercial

Product

Part

VAPORBLOCK 6.....	VB6
VAPORBLOCK 10.....	VB10

APPLICATIONS

- Underslab Vapor Retarder/Barrier
- Foundation Wall Vapor Retarder
- Radon Retarder

Note: All instructions on architectural or structural drawings should be reviewed and followed. Detailed installation instructions accompany each roll of VaporBlock and can also be located on our website.

ASTM E-1643 also provides general installation information for vapor retarders. All VaporBlock series materials can be installed with print or color facing up or down and will provide the same performance.

ASTM E-1745-11, "Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs".

VAPORBLOCK® VB6 & VB10

High Performance Underslab Vapor Barrier

		VAPORBLOCK VB6	VAPORBLOCK VB10	ASTM E 1745-11 Class A, B & C ¹
PROPERTIES	TEST METHOD	Imperial	Imperial	Imperial
APPEARANCE		Blue	Blue	-
THICKNESS, NOMINAL		6 mil	10 mil	-
ROLL SIZE		15 ft x 200 ft	15 ft x 200 ft	-
WEIGHT		29 lbs/MSF	49 lbs/MSF	-
CLASSIFICATION	ASTM E1745-11	CLASS C	CLASS A, B & C	Class A, B, or C
TENSILE STRENGTH AVERAGE MD & TD (NEW MATERIAL)	ASTM E154 Section 9, (D882)	32 lbs/in	52 lbs/in	Class A = 45 lbs/in Class B = 30 lbs/in Class C = 13.6 lbs/in
(AFTER EXPOSURE)		25 lbs/in	53 lbs/in	Minimum
PUNCTURE RESISTANCE	ASTM D1709 Method B	>1500 g	>2600 g	Class A = 2200 g Class B = 1700 g Class C = 475 g Minimum
PERMEANCE (NEW MATERIAL)	ASTM E154 Section 7 ASTM E96 Procedure B	0.090 *Perms	0.0146 *Perms	Class A, B, & C
(AFTER CONDITIONING)	ASTM E154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.105 0.124 0.097 0.099	0.0153 0.0151 0.0160 0.0181	0.1 *Perms Maximum
WVTR	ASTM E96 Procedure B	0.080 grain/hr-ft ²	0.0084 grain/hr-ft ²	-
MAXIMUM USE TEMPERATURE		180° F	180° F	-
MINIMUM USE TEMPERATURE		-70° F	-70° F	-

* grains/(ft²-hr-in Hg)

¹ Referencing ASTM E1745-11, Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs



VaporBlock® can be identified as blue in color printed with the VaporBlock® logo and the conformance information listing ASTM E-1745, classifications.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com



Engineered Films Division
P.O. Box 5107
Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333

Toll Free: 800-635-3456
Email: efdsales@ravenind.com
www.ravenefd.com
3/14 EFD 1485



Scan QR Code to download
current technical data sheets
via the Raven website.

RP Series



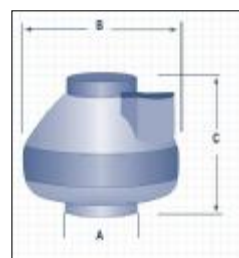
Radon Mitigation Fan

All RadonAway® fans are specifically designed for radon mitigation. RP Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems.

Features

- Energy efficient
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Seams sealed to inhibit radon leakage (RP140 & RP145 double snap sealed)
- ETL Listed - for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use

MODEL	P/N	FAN DUCT DIAMETER	WATTS	MAX. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC				
					0"	.5"	1.0"	1.5"	2.0"
RP140	23029-1	4"	15-21	0.8	135	70	-	-	-
RP145	23030-1	4"	41-72	2.1	166	126	82	41	3
RP260	23032-1	6"	50-75	1.6	272	176	89	13	-
RP265	23033-1	6"	91-129	2.3	334	247	176	116	52
RP380	28208	8"	95-152	2.3	497	353	220	130	38



Model	A	B	C
RP140	4.5"	9.7"	8.5"
RP145	4.5"	9.7"	8.5"
RP260	6"	11.75"	8.6"
RP265	6"	11.75"	8.6"
RP380	8"	13.41"	10.53"



Made in USA with US and imported parts



ETL Listed



All RadonAway inline radon fans are covered by our 5-year, hassle-free warranty

For Further Information Contact



Radon Mitigation Fan

All RadonAway™ fans are specifically designed for radon mitigation. The SF180 fan provides superb performance, runs ultra-quietly and is a low-profile, attractive alternative to a traditional round radon fan.

Features

- Stay-white (non-yellowing) exterior
- Built-in moisture/condensate management
- Seams sealed under negative pressure (to inhibit radon leakage)
- Interchangeable with other fan models
- Mountable on 3" or 4" pipes
- Inlet/Outlet: 4.3" OD
(4" PVC Sched 40 size compatible)
- Designed to conceal electrical disconnect
- Quiet operation
(Mounting method limits vibration transfer)

MODEL	FAN DUCT DIAMETER	WATTS	MAX.PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC				
				0"	.5"	1.0"	1.5"	2.0"
SF180	3" or 4"*	53-71	2.1	149	127	96	61	-

*Exterior Switch Kit and PVC offset coupling sold separately, call for details.



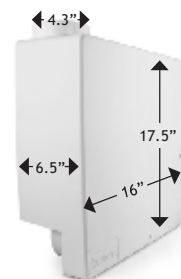
Made in USA with US and imported parts



ETL Listed



All RadonAway inline radon fans are covered by our 5-year, hassle-free warranty



For Further Information Contact



INSTALLATION & OPERATING INSTRUCTIONS

Instruction P/N IN015 Rev E

**FOR CHECKPOINT IIa™ P/N 28001-2 & 28001-3
RADON SYSTEM ALARM**

INSTALLATION INSTRUCTIONS

(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint IIa is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two 1/4" holes 4" apart horizontally where the unit is to be mounted.

Install the two 1/4" wall anchors provided.

Hang the CHECKPOINT IIa from the two mounting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.

Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT IIa.

CALIBRATION AND OPERATION.

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:

28001-2 - .25" WC Vacuum

28001-3 - .10" WC Vacuum

To Verify Operation:

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT IIa plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

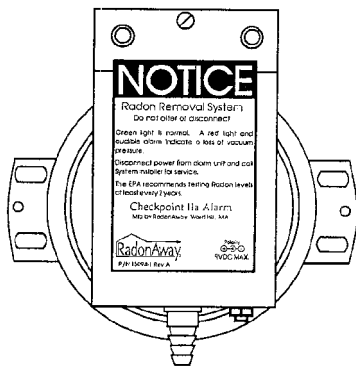
Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

WARRANTY INFORMATION

Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT IIa will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTABILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.

For service under these warranties, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. **No returns can be accepted without an RMA.** If factory return is required, the customer assumes all shipping costs to and from factory.



Manufactured by:
RadonAway
Ward Hill, MA
(978)-521-3703

RES105 RAW DATA PACKAGE

Location ID	Parameter Name Report Units	Date Sampled	Sample Purpose	1,1,1-Trichloroethane		1,1,2-Trichlorotrifluoroethane		1,1-Dichloroethane (1,1-DCE)		1,1-Dichloroethene (1,1-DCE)	
				(TCA) ug/m3	Report Result	(CFC 113) ug/m3	Report Result	DCA) ug/m3	Report Result	DCE) ug/m3	Report Result
BLANK-RES106		10/15/2015	FB		ND 0.18		ND 0.090		ND 0.099		ND 0.082
RES104-OUT-1		10/15/2015	REG		ND 0.19		0.50		ND 0.10		ND 0.086
RES105-AMB-1		10/15/2015	REG		ND 0.18		0.59		ND 0.099		ND 0.082
RES105-AMB-1		10/15/2015	FD		ND 0.18		0.56		ND 0.099		ND 0.082
RES105-PATH-1		10/15/2015	REG		0.26		2.4		ND 0.10		ND 0.084

RES105 RAW DATA PACKAGE

Parameter Name		cis-1,2-Dichloroethene		Tetrachloroethene (PCE)		trans-1,2-Dichloroethene		Trichloroethene (TCE)	
Report Units	Date	ug/m3		ug/m3		ug/m3		ug/m3	
Location ID	Sampled	Report Result		Report Result		Report Result		Report Result	
BLANK-RES106	10/15/2015	ND 0.10		ND 0.090		ND 0.10		ND 0.067	
RES104-OUT-1	10/15/2015	ND 0.10		0.12		ND 0.11		ND 0.070	
RES105-AMB-1	10/15/2015	ND 0.10		0.098		ND 0.10		2.6	
RES105-AMB-1	10/15/2015	ND 0.10		0.12		ND 0.10		2.6	
RES105-PATH-1	10/15/2015	ND 0.10		0.30		ND 0.11		19	
		Sample Purpose							
		FB							
		REG							
		REG							
		FD							
		REG							

ACCESS AGREEMENT

This Access Agreement ("Agreement") is entered into on this ____ day of _____ 2016, between _____ ("Licensor"), the United States Environmental Protection Agency ("EPA") and Philips Semiconductors, Inc. ("Philips"). EPA and Philips will each be referred to as a "Licensee" and collectively referred to as the "Licensees." Licensor and Licensees shall be collectively referred to as the "Parties."

Licensor consents to grant Licensees and their designated agents, contractors, and representatives access to enter the property located at _____, Sunnyvale, California (the "Premises"), for the purpose of installing, monitoring, maintaining and if necessary, removing a vapor intrusion mitigation system (the "Mitigation System"), as more fully described in Exhibit A which has been reviewed and approved by EPA and is attached to and made a part of this Agreement.

Terms and Conditions

1. Access. Subject to the terms and conditions of this Agreement, Licensor hereby grants Licensees the nonexclusive right and license to access the Premises at such times and locations and along such routes as may be acceptable to Licensor, for the sole purpose of installing, monitoring, maintaining and, if later agreed upon, removing the Mitigation System. All installation, monitoring, maintenance and if necessary, removal costs for the Mitigation System shall be at the sole cost and expense of the Licensee engaging in their respective work relating to the Mitigation System.
2. Non-Interference. The access rights granted to Licensees under this Agreement shall at all times be exercised in such a way as to minimize interference with the Licensor's present and future reasonable use and enjoyment of the Premises.
 - (a) Licensees each represent that they shall conduct their respective activities with due regard for the need to minimize interference with the Licensor's use and enjoyment of the Premises.
 - (b) While on site, each Licensee shall keep the Premises free from accumulation of materials associated with their respective activities and shall be responsible for removal of any tools, equipment, surplus materials and rubbish related to their individual work.
 - (c) Licensor shall not move, alter, tamper with, or damage any materials or personal property of the Licensees. If the need should arise to remove any materials or personal property from the Premises, Licensor shall notify Licensees and request that the materials or personal property be removed.
3. Termination. Licensor may terminate this Agreement at any time by written notice to Licensees. This Agreement shall otherwise terminate when EPA reasonably determines the Mitigation System is no longer needed at the Premises.
4. Restoration. Should Licensor choose to have the Mitigation System removed, each

Access Agreement:

_____, Sunnyvale, CA

Licensee shall, at its sole expense, remove any materials and equipment it brought onto the Premises and restore the Premises as close as practicable to its condition prior to that individual Licensee's activities.

5. Notification. Licensor shall notify Licensees promptly of any damage to or malfunction in the Mitigation System.

6. Warranty of Licensor. Licensor warrants and represents that he/she has the authority to enter into this Agreement to grant access to Licensees to perform Mitigation System installation, monitoring, maintenance and removal work, and, where applicable that Licensor has notified all impacted tenants at the Premises and secured all necessary agreements from impacted tenants.

7. Miscellaneous.

(a) Choice of Laws. This Agreement shall be governed by and interpreted in accordance with federal law and, where appropriate, the laws of the State of California.

(b) Nature of the Agreement. This Agreement does not convey any estate or interest in the Premises to Licensees or any other person or entity.

(c) Entire Agreement. This Agreement constitutes the entire agreement of the Parties relative to the subject matter hereof and supercedes any and all prior or contemporaneous proposals, negotiations, and representations of the Parties. This Agreement may not be amended or modified except in writing and signed by the Parties in the same manner as this Agreement. This Agreement may be executed in several counterparts, each of which will be fully effective as an original, all of which together will constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the date(s) indicated below their respective signatures.

LICENSOR(s)

Signature: _____

Name: _____

Title: _____

Date: _____

Signature: _____ [additional signatories, if applicable]

Name: _____

Title: _____

Date: _____

///

Access Agreement:

_____, Sunnyvale, CA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (LICENSEE)

Signature: _____

Name: _____

Title: _____

Date: _____

PHILIPS SEMICONDUCTORS, INC. (LICENSEE)

Signature: _____

Name: _____

Title: _____

Date: _____